Roll No. .....

Total Pages : 3

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BT-7/M-24

SOFTWARE VERIFICATION & VALIDATION AND TESTING

Paper – PE-CS-D403A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT–I

1. (a) Explain the concept of test oracles and their significance in software testing.
   (b) Explain the difference between verification and validation, and why both are essential in ensuring software reliability.

2. (a) Discuss some common challenges and limitations encountered in software testing, and how they can be mitigated to improve overall quality assurance.
   (b) What criteria are used to develop effective test oracles, and why are they critical in the testing process?

UNIT–II

3. (a) What is Cyclomatic Complexity, and how is it calculated? Discuss its use in test case generation. Use suitable example.

(c) What is Mutation Testing, and how does it assess the effectiveness of test cases in detecting faults? Discuss.

4. (a) Discuss the principles behind Equivalence Class Testing and its application in test case generation.

(b) What are DD-Paths, and how do they aid in understanding the flow of data within a software system?

UNIT–III

5. (a) Discuss the role of regression testing in minimizing the number of test cases and ensuring the stability of software systems over time.

(b) Describe the different levels of testing and their respective objectives in ensuring the quality and reliability of software products.

6. (a) What is slice-based testing, and how does it contribute to the reduction of test cases while maintaining testcoverage?

(b) What strategies and techniques are commonly used in debugging software issues?

UNIT–IV

7. (a) Explain the McCall model of software quality and its components for assessing software quality.

(b) Explain stress testing and its importance in evaluating the performance and robustness of software systems under extreme conditions.

8. (a) What is the Capability Maturity Model (CMM), and how does it help organizations improve their software development processes?

(b) What is ad hoc testing, and how do techniques like buddy testing and exploratory testing fit into this approach?
